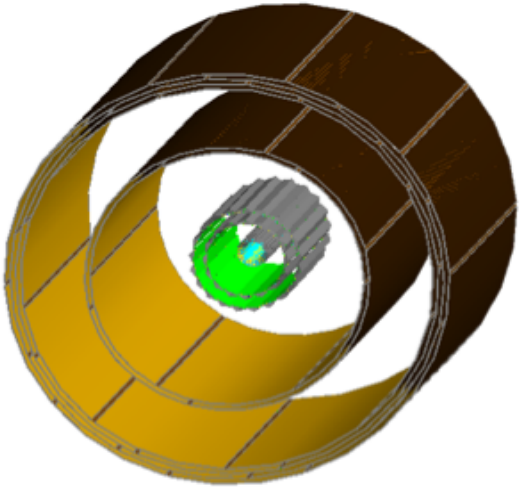
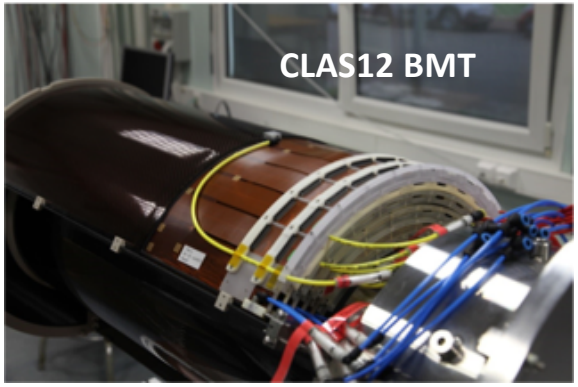
Barrel Tracker: Cylindrical Micromegas @ CEA Saclay

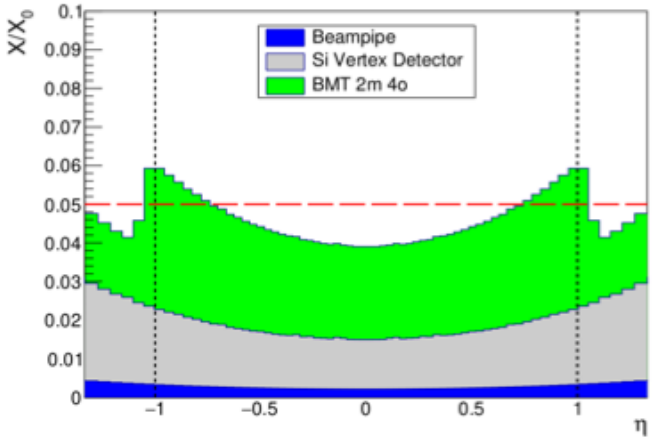
Simulation studies:

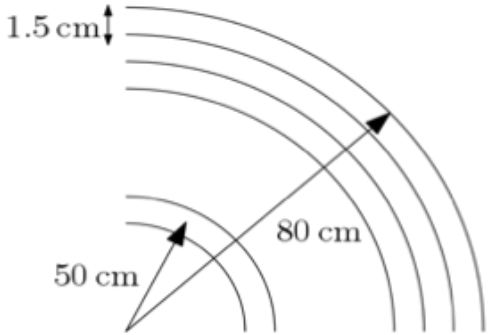
- Hybrid detector: silicon vertex detector + gaseous barrel tracker
- Micromegas tiles arranged in concentric cylindrical layers
- Each tile is about 50cm wide
- Technology based on CLAS12 Micromegas, with 2D readout
- Assumed resolutions: 150μm both in rϕ and z directions
- Six layers tracker well within material budget requirements
- Several layer geometries tested





Material budget from Geant4





Repository: *https://github.com/hqh0127/EIC_MMStripCZ*

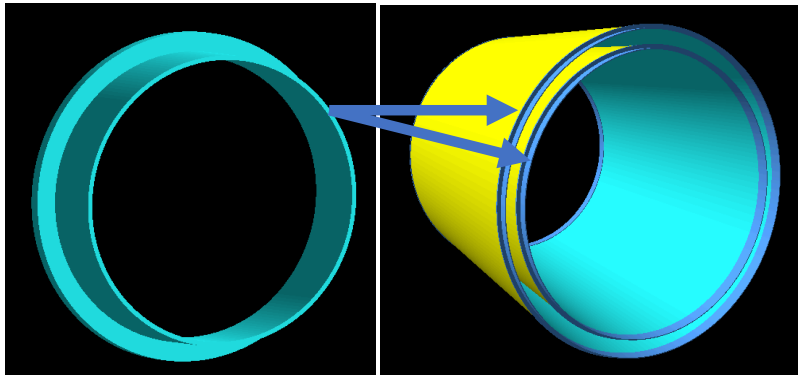
Example macro: *https://www.dropbox.com/sh/qawukysl3zy9hce/AACGakeZrIsg05hYnPhCEywBa?dl=0*

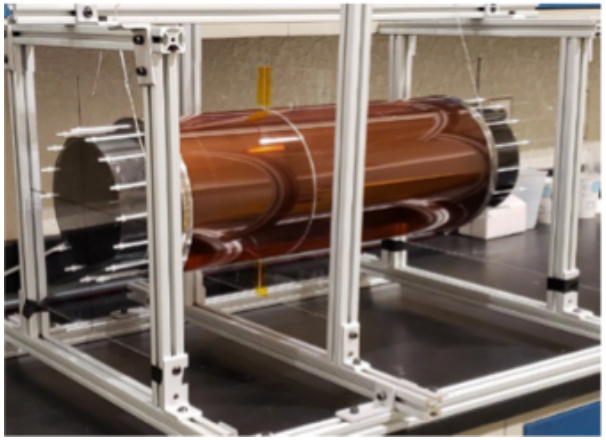
Central Tracker: Cylindrical µRWELL @ FIT, TU, UVa

- **Cylindrical $\mu RWELL$ layer Fun4All Implementation**
  - Implemented cylindrical $\mu RWELL$ and FIT support structure rings into simulation (Fun4All)
  - **PEEK** and **Carbon Fiber** materials show similar budget

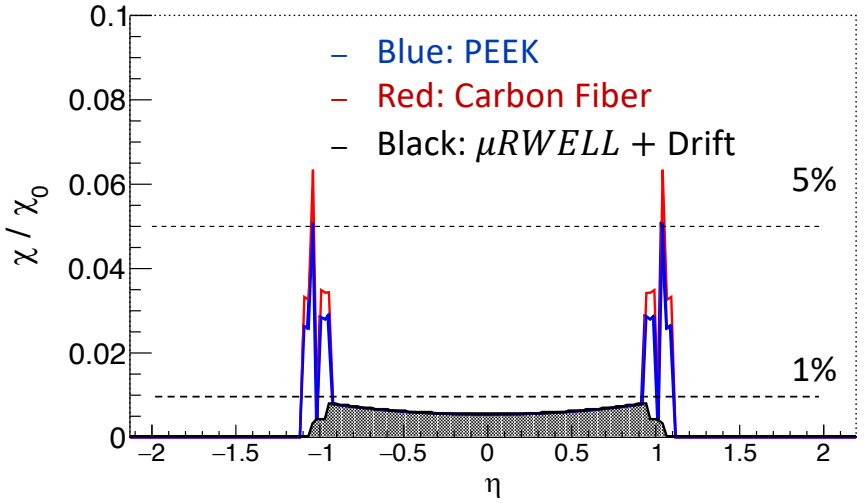
FIT mock prototype

Simulation implementation





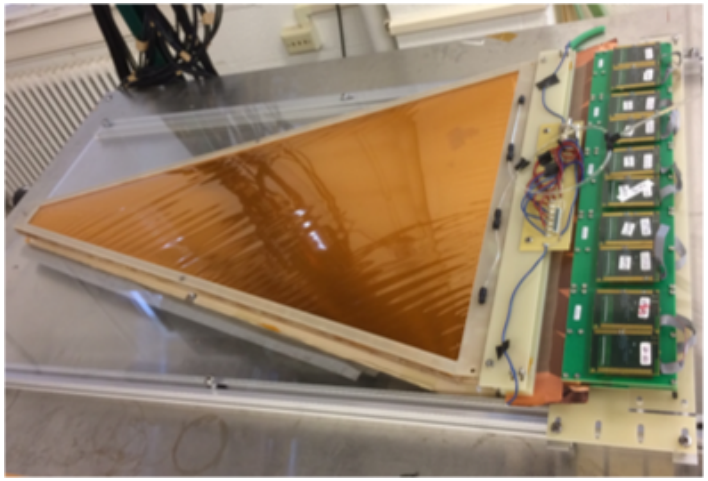
Cylindrical $\mu RWELL$ mock-up (FIT)



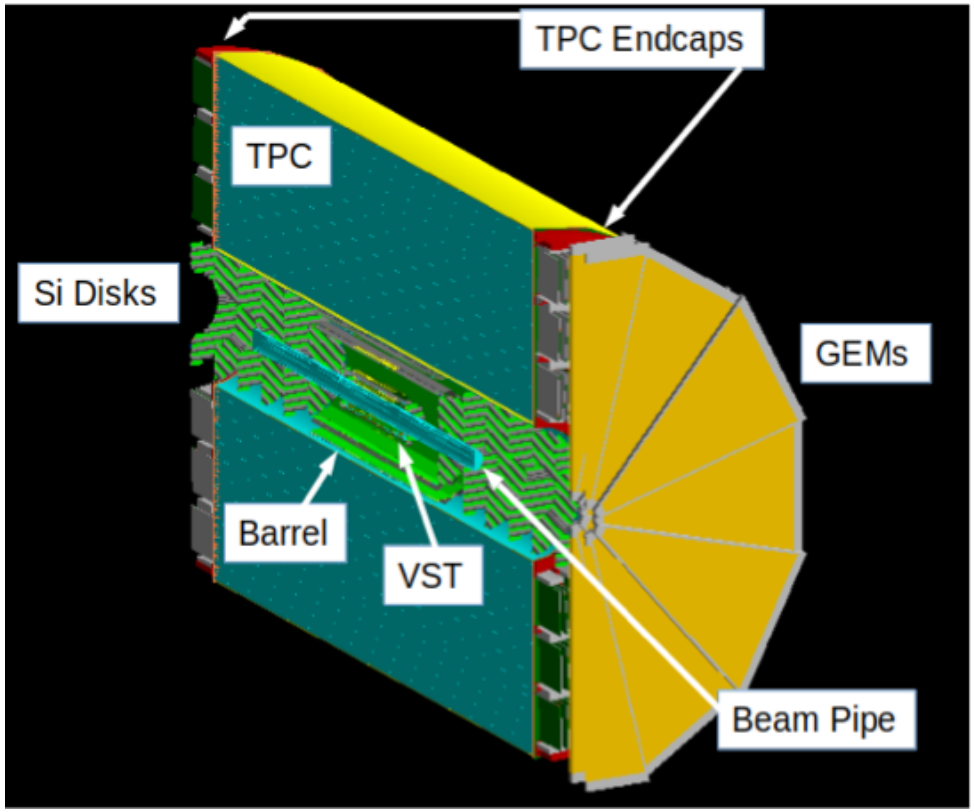
Endcap Tracker: GEMs @ FIT ,TU, UVa

Planar GEM Trackers

- Imported EicRoot GEM trackers into Fun4All
- Material budget based on Super BigBite GEM trackers
- Develop planar $\mu RWELL$ trackers



EIC GEM tracker prototype (UVa)



SiMPLE @ IP6: A Detector Design